have a right to enter. All those who will not disgrace themselves by joining in the unseemly scuffle must expect to be at first hustled and shouldered back. Some men of talents accordingly turn away in dejection from pursuits in which success appears to bear no proportion to desert. Others employ, in self-defence, the means by which competitors far inferior to themselves appear for a time to obtain a decided advantage. There are few who have sufficient confidence in their own powers, and sufficient elevation of mind, to wait with secure and contemptuous patience, while dunce after dunce passes before them. Those who will not stoop to the baseness of the modern practice are too often discouraged. Those who stoop to it are always degraded."

Such were the words of the brilliant essayist forty-five years ago; they may seem somewhat strong in these politer times. In fact, our fathers were harder hitters than we are, but hard hitting is in no way inconsistent with fair fighting. They appear to me worth repeating now, and they are not without some application to the subject I have been discussing.

I cannot help thinking that if medical reviewers of the present day were animated by a like spirit, we should soon see changes for the better in the character and tone of our medical literature; at all events, we might hope for a great diminution in the numbers of books written. But, somehow or other, now-a-days it is only as a rare exception that one sees a medical review in which the talents and research displayed by the author are not conspicuously put forward; and if we are to depend upon reviewers, most of the medical books now published are as nearly as possible on the same dead level of superiority. I do not know how to account for this; I never wrote a book, and therefore have not been behind the scenes. I should be the last person to imagine that private influences or personal friendships had anything to do with it, because these, of course, never count for anything when it is a question of the performance of a public duty. But "a fellow feeling makes us wondrous kind"; and when almost everybody writes a book, and the reviewer of to-day will often be the reviewed of to-morrow, may not such fellow-feeling sometimes exercise an unconscious operation? Or may it be that reviewers act upon the maxim laid down, I believe, by Sydney Smith, who said it was taking an unfair advantage of an author to read his book before reviewing it, because it is so important to approach the subject with a mind perfectly free from prejudice. Anyhow, it appears to me that in the matter of reviewing, it would be a great advantage to have a little more critical discrimination, a little more separation of wheat from chaff, perhaps a little less good nature, but certainly a good deal more plain speaking.

Our profession has, I believe, a bright future in store for it, but it rests with itself whether it will use its opportunities aright. Its sphere of usefulness is expanding day by day. The great science of public and preventive medicine is only now just springing into active life. Its cultivation is an object worthy of the highest ambition, and affords ample scope for the highest order of intellect. The public is by degrees learning to look to us for the solution of some of the most intricate and important social problems of the day; and as the necessity for doing so becomes more and more manifest, so, if we prove worthy of its confidence, must the estimation in which we are held be increased.

But if our calling is to rise in the future to that high position—which, for the welfare of the community at large still more than for its own advantage, it *ought* to occupy; and which, as I believe, there are signs of the times indicating that it is sooner or later *destined* to occupy—it must be, amongst other things, through the resolute discountenancing by the general body of those petty artifices by which some among us try to steal a march upon their fellows. It must be by the abandonment of individual self-seeking, at the expense of the character of that general body; it must be by the cultivation of a thorough loyalty to our order, combined always with the consciousness that the profession is for the public, and not the public for the profession. Such self-abnegation will be found in the end to be only a more enlightened self-interest, but of a kind at which no man will have a right to scoff. Still, it is only by insisting, as far as possible, on the maintenance of an elevated standard among the units, that the elevation of the mass can be secured; and each of us cannot do better than keep in mind that

> "The purest treasure mortal times afford
> Is spotless reputation: that away,
> Men are but gilded loam, or painted clay."

THE BOSTON COTTAGE INFIRMARY will soon be completed and opened for patients. Nearly the whole of the estimated expense of the building has been subscribed; but, owing to the loss of part of it, which was paid into Messrs. Gee and Co.'s Bank, £250 is still required.

THE RELATIONS OF WOMEN TO OBSTETRIC PRACTICE.

Extract from the President's Address, delivered at the Obstetrical Society on January 6th, 1874.

BY EDWARD J. TILT, M.D.,
President of the Society.

[THE first part of the President's address was mainly occupied by obituary notices of deceased Fellows and a review of the affairs of the Society. It concluded as follows.]

Independently of our work as a scientific Society, you know that we have been occasionally obliged by our metropolitan position to take the lead in questions relating to the welfare of obstetric medicine; and last year we were called upon to decide whether our laws permitted us to admit women to the fellowship of the Society. Your almost unanimous decision that women were not admissible was one of great importance; for the profession felt that, although the question was tried on a technical point, your verdict really meant that women were not qualified by nature to make good midwifery practitioners; that they were unfit to bear the physical fatigues and the mental anxieties of obstetrical practice at menstrual periods, during pregnancy and puerperality; and that it was unfair to society to encourage women to suppose that they could ever fit themselves to assume responsibility in those formidable obstetric emergencies which too often completely paralyse men of experience as midwifery practitioners. The remembrance of your decision on this question may also remind you that last year I explained to you that, in England, the lower classes of society were at the mercy of uneducated midwives, uncontrolled by aught else than the fear of a coroner's inquest. Last year, Lord Aberdare and Mr. Stansfeld were in office; they favourably entertained the views repeatedly brought forward by the Society; and they were prepared to bring in a Bill for the better education and registration of midwives; when a change of Ministry convinced your Council that the question must be left in abeyance. It was after mature deliberation that the Obstetrical Society of London determined to move in this matter. Its original resolve has been sanctioned by successive Councils, and it will be for the new Council to decide whether it is not time to reopen the question with the new ministers. Ours is the only civilised country that has left unregulated the midwifery of the humbler classes; and it is a disgrace to obstetric medicine, that there should be no means of preventing an incompetent and drunken woman from assuming the name and the duties of a midwife. There is every probability that our efforts in this direction would be favourably received by a Government that has no great measures to carry, and which seems bent on dealing earnestly with all questions relating to public health.

Gentlemen, I cannot vacate the chair without thanking you for the invariable courtesy you have shown me in the discharge of my duty; and I likewise thank the numerous officers with whom you have associated me for having rendered easy and pleasant the duties of office. I am glad my place will be taken by one so well qualified as Dr. Priestley to preside over your meetings, to further the interests and support the honour of the Obstetrical Society of London.

REMARKS ON THE ORIGIN, VARIETIES, AND TERMINATION OF IDIOCY.*

BY GEORGE W. GRABHAM, M.D.,
Resident Physician and Medical Superintendent to the Asylum for Idiots, Earlswood.

THE information which I have to give upon this subject has been somewhat hurriedly got together in the intervals of routine work. Though not sufficiently definite or extensive for the foundation of any theory, and perhaps containing little that is new, the statistics and remarks upon individual groups and cases may nevertheless prove interesting to those who have not made idiocy their special study. The time at my disposal to-day being necessarily very limited, I will at once proceed to give short definitions of the terms "idiocy", "imbecility", "cretinism", and "dementia"; and afterwards some particulars of the causes of these affections, as far as I have been able to ascertain them by inquiries in eight hundred cases.

Idiocy may be defined as "an absence or arrest of development of the intellectual and moral faculties, either congenital, or occurring in new-born children". *Imbecility* is generally taken to signify "a milder

* Read before the East Sussex District of the South-Eastern Branch.

form of idiocy, not necessarily congenital, but supervening in infancy". *Cretinism* may be termed "an endemic form of idiocy or imbecility, in which there is, moreover, characteristic arrest of development, malformation, and deformity of the whole organism". *Dementia* differs from imbecility in being "a loss, more or less complete, through disease or injury, of faculties formerly possessed". The causes of these affections may be divided under four heads:—Endemic; hereditary, or family-predisposing; parental; and accidental; any or all of which may be more or less combined. The same cause may produce effects differing with the patient's age at the time of its application: thus epilepsy will cause idiocy in early infancy; in more advanced youth, imbecility; and, later in life, dementia.

A somewhat singular fact may now be stated regarding the sex of the patients who have come under my notice. At Earlswood, the males are always twice as numerous as the females. Making every allowance for the supposition, that female idiots are more tolerable in private houses than males, and, therefore, less frequently sent to asylums, it would still appear that a large majority throughout the country are of the male sex. Nearly 65 per cent. of my eight hundred cases are stated to be congenitally defective; and, when we consider how difficult it is, even for a skilled observer, to detect idiocy in early infancy, we may feel sure that this percentage has not been overstated.

Hereditary predisposition is without doubt the chief agent in the production of mental deficiency; but it is extremely difficult to ascertain the real facts of the case, especially as it affects the upper classes of society, who appear to be almost more anxious to deceive themselves than their medical advisers on this point. Many of my patients not born with defective intellect have nevertheless inherited a predisposition which ultimately led to it. In about 18 per cent. of my cases, hereditary taint is admitted; but I am convinced that it exists in a far greater proportion of them; indeed, I have, in numerous instances, found this to be the fact from observation of the parents, or inquiries among their acquaintances. A mother, from whom I could learn no history of mental disease, and who certainly showed no indication of it in my presence, was afterwards found to be frequently moving to new lodgings, because "poison was put down the chimney into her food". In another case, I learned, after strenuous denial of any mental affection in the family, that two of the mother's sisters had been insane, and that she herself was highly hysterical. Where actual mental disease cannot be ascertained to have existed, we frequently find history of neuroses, as chorea; and often a great degree of eccentricity in one or both parents. A lady tells me, in a letter, that "her husband used to say that there was no such place as Hell; but she hopes now that he has found out his mistake".

Intemperance in the parents is even more difficult to ascertain. In six cases only of my eight hundred is it stated as the probable cause, and in two of these there was also hereditary insanity. Doubtless, *habitual* intemperance does play an important part in the production of idiocy; but I have been quite unable to assign (as has been done by my predecessor at Earlswood) any particular type of idiocy to "drunkenness during conception" as its cause. This vice is extremely common with newly married couples of the lower orders of society, whose first children are nevertheless, as a rule, at least as healthy as those of more wealthy parents.

Consanguinity of the parents accounts (partially only) for about 6 per cent. of the cases which have been admitted into the Asylum during the last six years and a half. In 11 cases only of 543, the parents were first cousins, and no other cause could be ascertained. Where hereditary predisposition coexists with marriage of consanguinity, we frequently find, as might be expected, more than one child affected. Noticing the frequency of tubercular disease as a cause of death at the Asylum, I have lately examined the papers relating to 249 cases, and find that in 55 of these, or 22 per cent., there is history of phthisis in the parents or near relatives. In 17 per cent., no other cause for the idiocy is given. Shocks or injuries to the mother, or severe anxiety while she is pregnant, are commonly supposed to act prejudicially on the child; and in many cases, in my opinion, with a high degree of probable truth. Rigid inquiry has failed to elicit any other cause in 85 out of 543 cases, or nearly 16 per cent. In many of these, the shock was a violent one; and I have an impression, not at present sufficiently confirmed by experience, that one very distinct, though small, class of the idiot is almost invariably attributable to this cause. This type usually occurs sporadically in a large and otherwise healthy family, without history of mental disease. No other cause appearing to account for these sporadic cases, we ought not to disregard the history which is forthcoming, and which I usually look for, of severe mental shock during pregnancy. As instances, I would name the bombardment of a city, a violent fall from a cart, the sudden accession of acute mania in a lady occupying the same bed, under circumstances of a peculiarly distressing nature. Interwoven with this part of the subject in many ways is the fact, that nearly 23 per cent. of my cases were first-born children. Leaving the question of tedious birth for future consideration, let us bear in mind the anxiety which often precedes a first confinement, and the increased mental strain when the child is illegitimate, or has not been conceived in wedlock; also the struggle and uncertainty which newly-married couples often experience in gaining a living. The old Mosaic law was wisely conceived, which exempted the newly married for one year from labour or necessity. Tedious birth, in some cases requiring instrumental assistance, is assigned as the sole cause of idiocy in 13 cases out of 243; but probably this number is much understated. Inquiry often elicits the fact, that the child was born in a state of asphyxia, and often even laid aside for a considerable time as past recovery. Probably some severe congestion of the brain here occurs, from which it may never entirely recover; or imperfect expansion of the lungs may take place, giving rise to a cyanotic condition accompanying mental deficiency through life, but in which no malformation of the heart may exist. These cases of cyanosis are, however, by no means common. Convulsions within a few months after birth, or during the first dentition, account for nearly 20 per cent. of my cases; but it is certain, from inquiries made, that in many of these there was also some predisposing cause, the dentition exciting it only to action.

Undoubtedly, many children who were born sound become idiotic, imbecile, or demented from injuries, illness, or shocks during infancy or childhood. Including hydrocephalus supervening after birth, I find that there are about 12 per cent. who may be fairly supposed to have had their mental faculties destroyed or impaired by causes of this nature. Scarlatina, typhoid, measles, whooping-cough, severe injury to the head, being run over by a cart, ill-treatment, etc., appear in this category. A bad wet-nurse, or innutritious diet, leads to the same result in some instances.

Syphilis in the parents may account for a few cases. Information is not readily obtainable under this head; but I have seen well marked secondary syphilis in several of the children under my care.

The old age of a parent accounts for one or two cases, and premature birth for eight others. Masturbation is rarely a cause of the affections seen in an asylum for idiots. It is not uncommon, even with very young children; but is rather a symptom than a cause of their condition, which, however, it is capable of aggravating to a great degree, if unchecked. I have seen the habit cured by an occasional drop of acetum cantharidis on the prepuce in the male, and by administration of bromide of potassium in the female.

In about 27 per cent. of my whole number, no cause could be ascertained. The varieties of idiocy, using the term in a general sense, are very numerous, and run so much one into another, that it is difficult to classify them; and, as a rule, it is impossible to connect the various types with their respective causes. It may, however, prove interesting to describe the salient features of some classes, with a few remarks on diagnosis and prognosis. Idiocy, unless very marked, is not always to be recognised in early infancy. The form and size of the head alone must not be relied upon, but may furnish valuable evidence when considered in conjunction with other physical and mental signs. Some idiots have well proportioned heads, and a small head does not necessarily betoken idiocy. It is necessary to observe the way in which the infant takes and swallows nourishment; its general aspect; the flaccidity or otherwise of its muscles; its ability to raise or steady its head; to grasp the finger with its hand; its capability of noticing any passing objects, and following them with its eyes; its listening to or disregarding sounds; and the character of its voice. As life advances, the diagnosis becomes daily more easy. We compare the progress the child makes with that of other children; notice the state of the fontanelles as to closure; the form, size, and symmetry of the head; the palate, whether highly arched; the existence of any deformity; the state of the hands, as to their power of grasping; whether the fingers are thin, tapering, moist with saliva, and flaccid; the power of co-ordinating the muscles and directing the movements of the eyeballs; the circulation, whether feeble in the extremities; the presence or absence of paralysis or epilepsy: all these points will aid our diagnosis. A large proportion, nearly 130, of the inmates of the Earlswood Asylum suffer, more or less frequently, from epilepsy. This class comprises all the degrees of idiocy, imbecility, and dementia. Some are simply weak-minded, and capable of making themselves very useful; while others have lapsed into a condition of profound dementia. They vegetate rather than live, having almost no intercourse with the outer world, and little or no sensation, general or special. To this entire absence of mental wear and tear, we may perhaps attribute the fact that, though afflicted with numerous fits daily, they grow fat, and live on for many years. Epilepsy is occasionally cured; but, as a rule, these cases gradually, but

surely, deteriorate. The recurrence of the fits often annihilates all memory for recent events, entirely undoing any good which may have been acquired in their interval.

As the epileptic cases may be considered the most unpromising, so those may be deemed most capable of improvement in whom there is feeble-mindedness uncomplicated by paralysis, deformity, disease, or defective circulation; whose sensation, general and special, is normal, as also the power of co-ordinating the muscular movements.

True idiocy, unlike insanity, is invariably accompanied by other functional anomalies. Physical weakness or degeneration is constantly met with. The extremities are cold and livid, chilblains occurring, even during the warmer months, upon slight exposure. Assimilation is very imperfectly performed; the food, if not very digestible, sometimes passing almost unchanged. Diarrhœa in some is the rule rather than the exception. This defect of assimilation is seen in its most marked form in those rare cases where, in the face of a proper supply of vegetables, scorbutus occurs, and causes the destruction of one or more of the larger joints, as the knee or elbow, and, later on, the death of the patient.

A spongy and swollen state of the gums is frequently seen, also irregular decaying teeth and offensive breath. The secretions of the skin have likewise a peculiar, unpleasant odour. Undue brittleness of the bones is not uncommon. I have seen the femur and the humerus broken during the struggles caused by an epileptic fit; and I have found the long bones generally reduced to a mere shell after death. In many patients, general sensation is very low in degree, the extraction of a tooth or a toe-nail causing little or no pain. A child, who had severely burned his hand by holding it in a gas-flame, took the first opportunity after recovery to endeavour to renew an experience which to him did not appear painful. Verily, the burnt child does not always dread the fire. The special sensations are likewise affected. The taste appears to be perverted; but, perhaps, it should rather be regarded as absent, reasoning from what we know of the other senses. The organs of sight and hearing may be perfect, and yet useless: the patients see, but do not perceive. The impression formed on the optic or auditory nerve is duly transmitted to the sensorium, but no idea is thereby excited. The skin may be alike insensible to touch, heat, or cold.

A highly arched form of the palate is frequently seen in patients of weak intellect, and was attributed by Virchow to premature ossification of the sphenoido-basilar suture. The suture itself furnishes the material of ossification; so that, under ordinary circumstances, a skull-bone can only increase equally in all directions when this bone-originating suture-substance lies on all its sides. If, then, adjoining skull-bones be soldered together by premature ossification of the suture, a limit is set to further growth in that direction. If this happen to many sutures at the same time, a microcephalous skull results. If it only happen to one suture, or a part of one, an asymmetrical or deformed skull follows.

Some microcephalic patients are found to be capable of considerable improvement; one of the most marked cases of this type at Earlswood has learned to read and write, and is exceedingly useful in domestic work. On the other hand, a very unintelligent patient had a brain weighing 56¾ ounces after death.

The prognosis in congenital idiocy or imbecility is, as a rule, more favourable than in those cases where it has resulted upon convulsions during infancy; yet some of our most successful cases at Earlswood belong to the latter class.

Juvenile insanity is occasionally met with, accompanied by incoherence and delusions. Sometimes lucid intervals occur, when only a certain degree of weak-mindedness is apparent. These are unfavourable cases. Delusions are very rare in an idiot asylum, indicating, not absence, but perversion of intellect. Moral insanity, accompanying weak intellect, is more common. Patients affected with this variety of disorder are, perhaps, the most troublesome ones with whom we have to deal. The mischief and destruction wrought by them is almost incredible. Sometimes they have a very intelligent look; and they certainly know right from wrong, as they invariably choose the latter. They are cunning in the extreme, and evidently fear detection, though punishment would have no effect in correcting their perverse nature. Improvement to any great extent does not often occur in this class.

Another variety appears very promising, but causes much disappointment. It consists of bright, vivacious, intelligent-looking children, from whom much might be expected; but they are taught with extreme difficulty, appearing to lack the power of concentrating the attention upon any subject.

A rare class consists of sporadic cretins: stunted beings, with pale or discoloured skin, highly arched palate, deformed head, and tumid abdomen. These have been supposed by Dr. Fagge to have no thyroid gland; but this supposition has been proved to be incorrect by the occurrence of bronchocele in a typical instance under my care. Dr. Down read a paper on a case apparently of this type, which he attributed to drunkenness during conception.

Another very distinct class has many features in common with these last; but its members are much more improvable, though they seldom get beyond a certain stage. This type I hope to make the subject of a special paper. The Asylum contains a few patients who are affected with involuntary movements simulating chorea, but arising from a defect of co-ordinative power, which is, as far as I have been able to learn, congenital. The involuntary movements are remediable to some extent; but usually persist more or less through life. The mental faculties, on the other hand, may materially improve; indeed, it is wonderful to see what some of these patients can do with their hands, in spite of their infirmity.

A curious class may be termed that of the idiot "savans", in whom one or more faculties are amazingly developed, perhaps to the detriment of the rest. One has a marvellous power of acquiring languages and musical knowledge; another, great mechanical skill and original constructive ability; a third, though very childish, is no mean mental arithmetician; a fourth remembers all he reads; a fifth delights in dates; while a sixth can tell the time when awakened from sleep. General improvement has taken place in all these cases.

Dr. Seguin, a well known authority on idiocy, has given the support of his pen to a theory "that idiocy is found in its simplest forms among the labouring classes, and that, among the wealthier classes, it is not only oftener aggravated by accessory diseases, but also complicated with abnormal semi-capacities or disordered instincts, which produce heterogeneous types to an almost unlimited extent. It is from this class almost exclusively that we have musical, mathematical, architectural, and other varieties of the idiot savant; useless protrusion of a single faculty, accompanied by a woeful general impotence". I am quite unable to agree with this view; my experience of many of these idiot "savans" proving them to have sprung from parents in humble circumstances, and leading me to believe them to have resulted in many instances from hereditary insanity.

Permanent deafness and dumbness often accompany weak intellect, but do not prevent improvement under proper training. Some have even to some extent acquired the art of lip-reading. As to the general results of training, Dr. Seguin says with truth that "some have made more or less rapid progress, and qualified for different grades of manhood. Some present meliorations, which could not have taken place without the training, though they are mostly attributable to growth, increased strength, automatic habits, and unavoidable surroundings. Some are decidedly as idiotic as ever. Some actually retrograde, either by an *ab initio* falling off, or since a certain date, event, or sickness; or by the effects of that young senility of which idiots give the curious and, as I believe, unique example."

The diseases of idiots are of an asthenic type; they have little power of resisting any acute disease. Phthisis is frequent among them, often running a rapid course in a few weeks, unaccompanied by cough or expectoration. Too much importance has been attached to certain critical periods, when some sudden improvement is not uncommonly anticipated by the friends of the patient. I have witnessed no facts supporting these expectations. The age of puberty is undoubtedly a critical time with idiots; degeneration often commences then, and deaths are frequent; but I have not seen improvement suddenly commencing at this period. Those who survive it frequently remain without sexual development, and sometimes, in the case of females, great obesity supervenes.

The death-rate at Earlswood has been very low during the last six years and a half, no death having occurred from epidemic or infectious disease, which in former times has occasionally been very fatal. In this period, 160 deaths have taken place, at the average age of 17.6 years, from the following causes.

Tubercle in Brain or Membranes	3	Tubercular Peritonitis	2
Cerebral Disease, Softening, etc.	6	Inflammation or Ulceration of Bowels	5
Meningitis	7	Diarrhœa	2
Epilepsy	38	Hepatic Disease	2
Phthisis Pulmonalis	59	Renal Disease	6
Bronchitis and Pneumonia	9	Cancer of Ovary	1
Disease of Heart	2	Caries of Vertebræ	2
Juvenile Senility	7	Disease of Knee or Shoulder-joint	3
Tabes Mesenterica	6		

Thus 72 deaths are recorded from scrofulous diseases, ascertained to have existed, and 38 from epilepsy and its results. Many of the epileptics, moreover, had tubercular deposits in the lungs at the time of their death. Upon the other causes, it may be remarked that diarrhœa is frequent with idiots, and inflammation of the mucous coat of the intestines not uncommon, occasionally running into ulceration and perforation. The heading Cerebral Disease includes one or two cases in which a *post mortem* examination was not made, so that its precise

nature was not ascertained. Tubercle in the brain-substance occurred in one case. There were several hard masses as large as a filbert in the white matter of the hemispheres, while the corpus dentatum of the cerebellum was almost entirely supplanted by a hard scirrhus-looking mass, through which nerve-fibres appeared to pass. Doubting the nature of this product, I submitted it to Dr. Lockhart Clarke, who kindly examined it, and pronounced it to be tubercle. The child in whose brain this deposit occurred will doubtless be remembered by some of the members of this Branch, as having been pointed out to them when they visited the Asylum. He had never learned to walk, seldom used his hands, though they were by no means powerless; but could make wonderful use of his feet, with which he would throw or catch a small cushion, hold a biscuit while eating it, rub his eyes, or scratch his head. The movements of the eyeballs were imperfectly controlled, but this was the only apparent defect of co-ordinative power. The child died very suddenly, without any previous illness. A case of disease of the knee-joint and another of the shoulder-joint were originally due to a severe attack of scorbutus, the former surviving three years, and the latter about three weeks.

One of the cases of caries of the vertebræ was interesting, from the fact, that, though dislocation of the axis and atlas actually occurred, death did not immediately result from it. The nature of the disease was suspected some time before death, and the patient very carefully attended to in bed. The actual cause of death was intense inflammation of the membranes, consequent upon the entrance of pus into the cranium through the foramen magnum.

The term Juvenile Senility is the only appropriate one with which I am acquainted for describing a not uncommon cause of death in idiots. An undeveloped child (perhaps I ought to say "man", for he was 22 years of age, though only 2 feet 4 inches high), suddenly began to fail in spirits and in appetite. His circulation became gradually more feeble, and his temperature fell, until his extremities were perfectly cold. Death resulted in a few days, and a *post mortem* examination revealed no disease.

THE DETERMINATION OF REFRACTION OF THE EYE.

By W. LAIDLAW PURVES, M.D.

EVERY one who has to determine the refraction of numerous patients, knows the trouble and labour involved in finding the number of lens in the test-box, cleaning the lens when found, placing it in a proper position before the eye of the patient, and replacing it in its proper slit in the box. When to these are added, in the case of patients with astigmatism, the placing of the axes of the cylindrical lenses always in the already determined meridian, no one is able satisfactorily to order glasses in the usual hours of a *clinique* for half the cases of astigmatism which present themselves at any large ophthalmic hospital. I believe that half an hour is about the limit which should be given to a case at a visit. Though the surgeon may not have tired of observing, the patient is generally by that time in a condition in which his answers cannot be well relied on; and, if the surgeon have not by that time satisfied himself of the lens necessary, it is better to hold by the observations already made, and add to them on a future occasion. Any means which will set aside the difficulties above mentioned, and at the same time determine the refraction with accuracy equal to the means already used, will prove of use both to patient and to surgeon; and it is on this account I have had the following instruments constructed.

In two discs revolving from their centres, and placed on a telescopic stand, are cut thirteen apertures, in twelve of which are fixed twelve plano-convex and twelve plano-concave spherical lenses; the discs containing the one kind of lenses revolving, so that any number of lens in that disc can be brought against any lens in the discs containing the opposite kind of lens, as in the ophthalmoscope I proposed in the beginning of 1873. The two remaining apertures are left vacant. By these means, numerous powers are obtained, which will be found especially useful in cases of high degrees of ametropia.

The glasses placed in the discs are as follows: + and — 2, 3, 4, 5, 6, 8, 10, 13, 18, 24, 36, and 48; and by these are obtained the following + or — powers; viz., 2, 2.08, 2.11, 2.18, 2.25, 2.36, 2.5, 2.66, 3, 3.2, 3.27, 3.33, 3.42, 3.6, 3.9, 4, 4.28, 4.36, 4.5, 4.8, 5, 5.14, 5.58, 5.77, 5.80, 6, 6.31, 6.66, 6.85, 6.92, 7.2, 7.5, 8, 8.12, 9, 9.6, 10, 10.28, 11.14, 12, 12.63, 13, 13.33, 13.84, 14.4, 15, 17.14, 17.82, 18, 20, 20.8, 20.34, 22.5, 24, 28.36, 28.8, 30, 36, 40, 43.33, 46.8, 48, 72, 144. Each of these is engraved on one disc, and seen through apertures made in the other disc; but, should there not be sufficient to satisfy the demands of some, the enlarging of the discs and the substitution of other or more glasses is easy.

For the determination of astigmatic cases, the same method of revolving convex over concave cylindrical lenses, or *vice versâ*, is used; the placing of the axes in the different meridians being obtained by the same method as in Javal's optometer, or by causing the patient to look through the aperture in the disc corresponding to the meridian of his astigmatism. The two discs are so constructed as to revolve round a graduated circle external to their peripheries, so that any glass is brought before the eye with its axis in any desired meridian; while, being at the same time able to revolve upon a central axis, any single glass or single combination of glasses in the discs may be used as in the discs containing the spherical lenses. The cylindrical glasses used are as follows: 5, 6, 8, 12, 36, and 48 + and —, by which the following powers of each kind are obtained; viz., 5, 5.58, 5.80, 6, 6.85, 7.2, 8, 8.57, 9.6, 10.28, 12, 13.33, 16, 18, 24, 30, 36, 48, 144.

The two instruments may be used separately or together.

For the purpose of controlling the patient's accuracy of observation for the different meridians, I use a disc with varied numbers of lines engraved in different meridians, by the revolving of which one can determine whether the patient sees accurately in any meridian by his counting correctly the number of lines placed in that meridian. I have had lines and letters similar to Pray's cut out in metal, and so placed against a light that patients in whom the circles of diffusion are abolished sufficiently by lenses, can recognise the number of lines or the letters used; but I find the above described method the simplest.

As the calculation of fractions is a trouble to some, I have had a boxwood scale made, which will suffice for calculating the fractions on the ophthalmoscope and optometer, the latter of which would be considerably lessened in price by the using of the card instead of the engraving and boring of the discs necessary to show the combinations.

This optometer fulfils, I believe, all the requirements necessary in determining cases of ametropia, in that by it we can determine at the same time the condition and degree of refraction and the acuteness of vision, the latter of which has, in the optometers of Young, Lawrence, Burow, Graefe, Javal, etc., to be determined as a second step, and all artificial values are done away with.

I trust that, by thus simplifying the determination of ametropic cases, general practioners may be induced to give more attention than hitherto to the relief and prevention of the numerous and varied consequences which the non-use of glasses in ametropes often entails.

MICROSCOPICAL EXAMINATION OF THE SPUTUM IN PHTHISIS.*

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I DESIRE to say a few words upon the method and value of a microscopical examination of the sputum in phthisis. During several years, I have been in the habit of occasionally using the microscope in the examination of pulmonary expectoration. In some cases of chronic phthisis, such a procedure may sometimes give information which no other mode of research can furnish. It is not necessary for my present purpose that I should enter into a discussion of the pathology of consumption of the lungs. My remarks concerning sputum apply to cases of ordinary chronic phthisis. The term "phthisis" has now become generic; it includes several varieties of pathological change, the discrimination of which is of the highest practical importance. But all my hearers—whether, with Laennec and many others, they believe in the existence in the lungs in phthisis of crude lumps of yellow tubercle; whether, with Niemeyer, they hold such masses to be simply inflammatory products which have undergone a cheesy metamorphosis; or whether, following the example of many English pathologists, they take that middle course which is usually held to be the safest—whatever be their own views on a subject which is certainly at present far from clearly worked out, my hearers all know what I mean when I speak of the ordinary form of chronic pulmonary phthisis. I mean the commonest kind of consumption. I mean the commonest of all diseases of the lungs. I mean a disorder which runs a chronic course, and is characterised by the extensive and extending solidification, softening, and excavation of circumscribed portions of pulmonary tissue.

So far as I remember, my attention was first drawn to the importance

* Read before a meeting of the Microscopical Section of the Birmingham and Midland Counties Branch.